

What we claim is:

1. A method for testing progeny plants, comprising
  - (a) asexually propagating progeny plant(s) from a mother plant without passing through a callus phase or involving cell or protoplast culture.;
  - (b) incorporating the so obtained progeny plant into a plant screening program; and
  - (c) monitoring the growth of the progeny plant.
2. A method according to claim 1, wherein the propagation step is accomplished by
  - (a) cutting a short segment from a mother plant such that said segment is capable of directly regenerating into a whole and morphologically normal plant,
  - (b) transferring said excised segment to a suitable anchorage material; and
  - (c) regenerating said transferred segment into a whole and morphologically normal plan without passing through a callus phase or involving cell or protoplast culture.t
3. A method according to claim 2, wherein said segment comprises a region that contains a high amount of actively dividing cells.
4. A method according to claim 3, wherein said region comprises meristematic cells.
5. A method according to claims 3 and 4, wherein said segment comprises a short root and shoot fragment.
6. A method according to claim 2, wherein the anchorage material is
  - (a) an inert material such as vermiculite, perlite or plastic beads;
  - (b) a culture medium commonly applied in plant cultivation; or
  - (c) soil.

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7. A method according to any of the previous claims wherein said method is used within a high through-put format.
8. A method according to claim 1, comprising
- (a) cutting a short segment from a mother plant such that said segment is capable of directly regenerating into a whole and morphologically normal plant,
  - (b)<sub>1</sub> dipping said segment into a known concentration(s) of a pesticide-containing solution; or, in the alternative
  - (b)<sub>2</sub> spraying said segment with a known concentration(s) of a pesticide-containing solution;
  - (c) transferring the so treated plant explants to a suitable anchorage material;
  - (d) regenerating said explant into a whole and morphologically normal plant without passing through a callus phase or involving cell or protoplast culture.;
  - and
  - (e) monitoring the growth of the progeny plant.
9. Method of rescuing plants showing an interesting trait or property after treatment with a pesticide for further investigation comprising
- (a) asexually propagating progeny plant(s) from a treated mother plant without passing through a callus phase or involving cell or protoplast culture.;
  - (b) incorporating the so obtained progeny plant into a plant screening program;
  - and
  - (c) monitoring the growth of the progeny plant.
10. Method according to claim 9, wherein the propagation step is accomplished by
- (a) cutting a short segment from a treated mother plant such that said segment is capable of directly regenerating into a whole and morphologically normal plant,
  - (b) transferring said excised segment to a suitable anchorage material; and
  - (c) regenerating said transferred segment into a whole and morphologically normal plant without passing through a callus phase or involving cell or protoplast culture..
11. Method according to claim 9 comprising

- (a) cutting a short segment from a treated mother plant such that said segment is capable of directly regenerating into a whole and morphologically normal plant,
- (b)<sub>1</sub> dipping said segment into a known concentration(s) of a pesticide-containing solution; or, in the alternative
- (b)<sub>2</sub> spraying said segment with a known concentration(s) of a pesticide-containing solution;
- (c) transferring the so treated plant explants to a suitable anchorage material;
- (d) regenerating said explant into a whole and morphologically normal plant without passing through a callus phase or involving cell or protoplast culture.;
- and
- (e) monitoring the growth of the progeny plant.

12. Method according to any of the previous claims, wherein the pesticide is selected from the group consisting of a herbicide, an insecticide and a fungicide.

13. Method for determining whether a resistance phenotype observed in a plant is due to a resistance trait or caused by other factors, comprising

- (a) collecting the phenotypically resistant plant
- (b) asexually propagating progeny plant(s) from said plant without passing through a callus phase or involving cell or protoplast culture.;
- (c) incorporating the so obtained progeny plant into a plant screening program;
- and
- (d) monitoring the growth of the progeny plant.

14. Method according to claim 13, comprising

- (a) collecting the phenotypically resistant plant
- (b) cutting a short segment from said plant such that said segment is capable of directly regenerating into a whole and morphologically normal plant,
- (c)<sub>1</sub> dipping said segment into a known concentration(s) of a pesticide-containing solution; or, in the alternative
- (c)<sub>2</sub> spraying said segment with a known concentration(s) of a pesticide-containing solution;
- (d) transferring the so treated plant explants to a suitable anchorage material;

(e) regenerating said explant into a whole and morphologically normal plant without passing through a callus phase or involving cell or protoplast culture.; and

(f) monitoring the growth of the progeny plant.

15. Method according to claims 13 and 14, wherein the resistance phenotype is observed after treating the plant with a pesticide.

16. Method according to claim 15, wherein the pesticide is selected from the group consisting of a herbicide, an insecticide and a fungicide.

17. Method according to any of the preceding claims, wherein the plant to be tested is a weed plant.

18. Method according to any of the preceding claims, wherein the plant to be tested is a crop plant.

19. Method according to any of the preceding claims, wherein the plant to be tested is a transgenic plant.

20. Use of a method according to any one of claims 1-8 for rescuing plants showing an interesting trait or property after treatment with a pesticide for further investigation.

21. Use of a method according to any one of claims 1-8 for determining whether a resistance phenotype observed in a plant is due to a resistance trait or caused by other factors.

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